ABSTRACT

In a semiconductor fabrication process, a compound semiconductor layer including nitrogen is treated with nitrogen plasma to recover from nitrogen vacancies in its surface. For example, in the fabrication of a compound semiconductor transistor, a first compound semiconductor layer including nitrogen and a second compound semiconductor layer differing in composition from the first compound semiconductor layer are deposited, source and drain electrodes are formed on the second compound semiconductor layer, and part of the second compound semiconductor layer between the source and drain electrodes is removed by dry etching to expose the first compound semiconductor layer. The first compound semiconductor layer is annealed to remove adsorbed dry etching gas species; then its exposed surface is treated with nitrogen plasma to recover from nitrogen vacancies left by the dry etching and annealing processes. A gate electrode formed on the exposed surface of the first compound semiconductor layer exhibits a desirable Schottky characteristic.